United States General Accounting Office

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Report to Congressional Committees

August 2002

CUSTOMS SERVICE MODERNIZATION

Third Expenditure Plan Meets Legislative Conditions, but Cost Estimating Improvements Needed

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GAO-02-908

United States General Accounting Office

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Highlights

CUSTOMS SERVICE MODERNIZATION
Third Expenditure Plan Meets Legislative Conditions, but Cost Estimating Improvements Needed

Highlights of GAO-02-908, a report to the Subcommittee on Treasury and General Government, Senate Committee on Appropriations, and the Subcommittee on Treasury, Postal Service, and General Government, House Committee on Appropriations.

Why GAO Did This Study

The U.S. Customs Service has begun a multiyear, multibillion-dollar project: the Automated Commercial Environment (ACE), a new import processing system that is planned to support effective and efficient movement of goods into the United States. By congressional mandate, Customs' expenditure plans for ACE must meet certain conditions, including being reviewed by GAO. This study addresses whether Customs' latest plan satisfies these conditions and provides observations about the plan and Customs' efforts to implement GAO's open recommendations for improving ACE management.

What GAO Recommends

Because GAO has an open recommendation to Customs for correcting its cost estimating deficiencies, which Customs reports will be fully implemented in December 2002, GAO is not making another recommendation at this time. Customs concurred with GAO's report and described actions that it is taking to improve its expenditure plan cost estimating.

What GAO Found

Customs' May 2002 ACE expenditure plan is the third in a series of legislatively required plans. This plan provides for the design, development, and deployment of the second release of the first of four planned ACE increments. The plan also meets the legislative conditions governing investment in ACE that Congress imposed on Customs.

Since 1999, GAO has reported on Customs' management of ACE and made a series of recommendations to correct deficiencies. Customs currently has efforts under way to respond to all of GAO's recommendations. One of these deficiencies that affects the third expenditure plan is Customs' lack of effective cost estimating capabilities. Specifically, the cost estimate in the third expenditure plan is questionable because of limitations in how it was derived and inconsistencies between this estimate and an independent estimate developed by a Customs contractor. Customs is currently determining the cause of the variance in the estimates.

The following table compares Customs' expenditure plan cost estimate with the Software Engineering Institute's seven questions for determining the reliability of an estimate.

Question	Yes	No
Are the objectives of the estimate clear and correct?	✓	
Has the task been appropriately sized?		✓
Are the estimated cost and schedule consistent with demonstrated accomplishments on other projects?		✓
Have the factors that affect the estimate been identified and explained?		✓
Have steps been taken to ensure the integrity of the estimating process?		✓
Is the organization's historical evidence capable of supporting a reliable estimate?		✓
Has the situation changed since the estimate was prepared?		✓

Contents

Abbreviations

ACE	Automated Commercial Environment
ACS	Automated Commercial System
CMM	Capability Maturity Model
CMO	Customs Modernization Office
COTS	commercial, off the shelf
eCP	e-Customs Partnership
FMCSA	Federal Motor Carrier Safety Administration
GAO	General Accounting Office
IBM	International Business Machines
ITDS	International Trade Data System
OMB	Office of Management and Budget
SA-CMM	Software Acquisition Capability Maturity Model
SEI	Software Engineering Institute

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United States General Accounting Office
Washington, D.C. 20548

August 9, 2002

The Honorable Byron L. Dorgan
Chairman
The Honorable Ben Nighthorse Campbell
Ranking Minority Member
Subcommittee on Treasury and General Government
Committee on Appropriations
United States Senate

The Honorable Ernest J. Istook, Jr.
Chairman
The Honorable Steny H. Hoyer
Ranking Minority Member
Subcommittee on Treasury, Postal Service,
and General Government
Committee on Appropriations
House of Representatives

In May 2002, the U.S. Customs Service submitted to Congress its third expenditure plan seeking release of $190.2 million for its Automated Commercial Environment (ACE) project, pursuant to Customs' fiscal year 2002 appropriation.[1] ACE is to be Customs' new import processing system and the first project under the Customs Modernization Program. As required by the act, we reviewed the expenditure plan. Our objectives were to (1) determine whether the third ACE expenditure plan satisfies the legislative conditions, (2) determine whether the plan is consistent with our open ACE recommendations, and (3) provide observations about the plan and Customs' management of ACE.

On June 28, 2002, we briefed your offices on the results of this review. This report officially transmits the results of our work. The full briefing, including our scope and methodology, is reprinted as appendix I.

Concerning our first objective, Customs' expenditure plan satisfies the legislative conditions specified in the appropriations act. That is, the plan provides for (1) meeting the capital planning and investment control review requirements of the Office of Management and Budget (OMB);

[1]Pub. L. No. 107-67, 115 Stat. 514, 520 (2001).

(2) complying with Customs' enterprise architecture;[2] and (3) complying with federal acquisition rules, requirements, guidelines, and systems acquisition management practices. Further, the plan was reviewed and approved by the Joint Capital Investment Review Board[3] and OMB.

Customs is also making progress in addressing our open recommendations, which are as follows:

1. Justify and make ACE investment decisions incrementally.

2. Before building each ACE release, certify to Customs' appropriations subcommittees that Customs' enterprise architecture has been sufficiently extended and updated.

3. Develop and implement a Customs Modernization Office (CMO) human capital management strategy.

4. Develop and implement a rigorous and analytically verifiable cost estimating program that embodies the tenets of effective estimating as defined in the institutional and project-specific estimating guidance of the Software Engineering Institute (SEI).

5. Limit future expenditure plan requests for management reserve funds to 10 percent of the total funds requested for the ACE program, or adequately justify any management reserve requests in excess of 10 percent.

6. Implement certain process controls embodied primarily in the second level of SEI's Software Acquisition Capability Maturity Model (SA-CMM),[4] and by September 30, 2002, assess and report to Customs'

[2]An enterprise architecture is an institutional blueprint for guiding and constraining investments in business process change and systems.

[3]To expedite reviews of ACE expenditure plans, the Customs and Treasury Investment Review Boards were consolidated to form the Joint Capital Investment Review Board, which first met in November 2001.

[4]Capability Maturity Model[SM] (CMM) is a service mark of Carnegie Mellon University, and CMM is registered in the U.S. Patent and Trademark Office. The SA-CMM identifies key process areas that are necessary to effectively manage software-intensive system acquisitions. Level 2 is the second level of the SA-CMM's five-level scale; achieving this level means that an organization has the software acquisition rigor and discipline to repeat project successes.

appropriations subcommittees on the CMO's software acquisition process maturity.

7. Address the risks associated with the accelerated ACE acquisition strategy and report to Customs' appropriations subcommittees on the strategy and plans for mitigating the risks associated with this strategy.

Finally, we determined that the cost estimate in the third expenditure plan is questionable because Customs is still in the process of addressing our recommendation (see recommendation 4) for having an effective cost estimating program. While the full impact of the weaknesses in the process used to derive the estimate was indeterminable, at least one limitation (an inflated labor rate) led to an overestimate of about $36 million for designing, developing, and deploying ACE increment 1 release 2. Because the expenditure plan includes a management reserve of 10 percent of the funding requirement, this means that the management reserve is also overstated by about $3.6 million.

According to an ACE prime contractor executive, the overstatement is offset by a corresponding understatement in the estimated number of labor hours, which the official attributed to Customs' not having a complete set of requirements at the time that the plan's estimate was derived. However, Customs also arranged for an independent cost estimate by another contractor, which led to an estimate that was $77.9 million lower than the expenditure plan cost estimate. Customs and support contractor officials stated that this independent estimate is incomplete and reflects a misunderstanding by the cost estimate contractor of the scope of work to be performed. Customs is currently determining the cause of the variance.

Because we have an open recommendation to Customs for correcting its cost estimating deficiencies, which Customs reports will be fully implemented in December 2002, we are not making a recommendation at this time.

Agency Comments

In written comments on a draft of this report, the Acting Director, Office of Planning, U.S. Customs Service, concurred with the report and described actions that are being taken to improve expenditure plan cost estimating. These comments are reprinted in appendix II.

We are sending copies of this report to the Chairmen and Ranking Minority Members of other Senate and House committees and subcommittees that have authorization and oversight responsibilities for the Customs Service. We are also sending copies to the Secretary of the Treasury, the Commissioner of the Customs Service, and the Director of OMB. We also will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

Should you or your staff have any questions on matters discussed in this report, please contact me at (202) 512-3439. I can also be reached by E-mail at HiteR@gao.gov. Key contributors to this report were Mark Bird, Barbara Collier, Tamra Goldstein, Randolph Tekeley, Scott Pettis, and Aaron Thorne.

Randolph C. Hite
Director, Information Technology Architecture
and Systems Issues

Custom's Third Automated Commercial Environment (ACE) Expenditure Plan

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Customs' Third Automated Commercial Environment (ACE) Expenditure Plan

Briefing for the staffs of the
Subcommittee on Treasury and General Government
Senate Committee on Appropriations
and
Subcommittee on Treasury, Postal Service, and General Government
House Committee on Appropriations

June 28, 2002

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Briefing Overview

Introduction

Objectives, Scope, and Methodology

Results in Brief

Background

Results

Conclusions

Agency Comments

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Introduction

The U.S. Customs Service is acquiring a new trade processing system known as the Automated Commercial Environment (ACE). ACE is intended to

- promote more efficient movement of legitimate trade and more effective enforcement of trade laws,
- strengthen border security operations, and
- include a single system interface between the trade community and the federal government known as the International Trade Data System (ITDS), which is to reduce the data reporting burden placed on the trade community and facilitate the collection and dissemination of trade data for agencies with trade-related missions.

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Introduction (cont.)

Customs is required in its appropriation[1] not to obligate funds for ACE until it submits to the Congress ACE expenditure plans that

- meet the capital planning and investment control review requirements of the Office of Management and Budget (OMB), including security planning;
- comply with the Customs enterprise architecture;
- comply with federal acquisition rules, requirements, guidelines, and systems acquisition management practices;
- are reviewed and approved by the Customs Investment Review Board, Treasury, and OMB; and
- are reviewed by GAO.

[1] Public Law 107-67.

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Introduction (cont.)

On May 24, 2002, Customs submitted its third ACE expenditure plan to its House and Senate appropriations subcommittees, seeking release of $190.2 million from the ACE appropriation.

Since 1999, we have conducted a series of reviews of Customs' ACE/ITDS program and made recommendations for strengthening program management.[2]

[2]U.S. General Accounting Office, *Customs Service Modernization: Management Improvements Needed on High-Risk Automated Commercial Environment Project*, GAO-02-545 (Washington, D.C.: May 13, 2002); *Customs Service Modernization: Results of Review of First Automated Commercial Environment Expenditure Plan*, GAO-01-696 (Washington, D.C.: June 5, 2001); *Customs Service Modernization: Serious Management and Technical Weaknesses Must Be Corrected*, GAO/AIMD-99-41 (Washington, D.C.: Feb. 26, 1999).

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Objectives, Scope, and Methodology

Objectives

As agreed, our objectives were to

- determine whether the third ACE expenditure plan satisfies the legislative conditions,
- determine whether the plan is consistent with our open ACE recommendations, and
- provide observations about the plan and Customs' management of ACE.

Scope and Methodology

To accomplish our objectives, we

- analyzed the plan and supporting documents, including security plans, to determine if the legislative conditions were met;
- analyzed the plan and supporting documents to determine consistency of actions taken with our open recommendations;

Objectives, Scope, and Methodology (cont.)

Scope and Methodology (cont.)

- analyzed progress and plans for integrating ACE and ITDS;
- interviewed Customs, ITDS, OMB, and contractor officials;
- analyzed ACE and ITDS supporting documentation to clarify and verify information in the expenditure plan; and
- as agreed, did not independently validate Customs' provided information, including cost estimates and project content and status information.

We performed our work from April 2002 through June 2002 in accordance with generally accepted government auditing standards.

Results in Brief: Objective 1

Customs' expenditure plan satisfies the legislative conditions.

Legislative conditions	Satisfies	Does not satisfy
1. Meets OMB capital planning and investment control review requirements, including OMB Circular A-11, part 3[3]	✓	
2. Complies with the Customs enterprise architecture	✓	
3. Complies with federal acquisition rules, requirements, guidelines, and systems acquisition management practices	✓	
4. Is reviewed and approved by the Customs Investment Review Board, Treasury, and OMB	✓	
5. Is reviewed by GAO	✓	

[3] Customs provided us with a draft of the expenditure plan before it was submitted to the appropriations subcommittees. We determined that the draft plan did not satisfy the requirements of OMB Circular A-11, part 3. After we discussed our analysis with Customs and support contractor officials, Customs amended the expenditure plan to satisfy the requirements before submitting it to the appropriations subcommittees.

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Results in Brief: Objective 2

Customs' expenditure plan is consistent with our open recommendations.[4]

Open recommendations	Consistent[5]		Inconsistent
	Complete	In progress	
1. Justify and make investment decisions incrementally.		✓	
2. Before building each ACE release, certify to Customs' appropriations subcommittees that Customs' enterprise architecture has been sufficiently extended and updated.		✓	
3. Develop and implement a rigorous and analytically verifiable cost estimating program that embodies the tenets of effective estimating as defined in the Software Engineering Institute's (SEI) institutional and project-specific estimating guidance.		✓	
4. Immediately develop and implement a Customs Modernization Office (CMO) human capital management strategy.		✓	

[4] Because Customs developed its third expenditure plan during our review of Customs' second expenditure plan, Customs is in the process of addressing the open recommendations resulting from our review of Customs' second expenditure plan.
[5] *Complete* means that Customs has addressed the recommendation and no additional action by Customs is required; *in progress* means either that Customs has taken steps to begin addressing the recommendation or that Customs has taken such steps, but additional steps are needed because the recommendation concerns a recurring issue.

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Results in Brief: Objective 2 (cont.)

Open recommendations	Consistent[5]		Inconsistent
	Complete	In progress	
5. Limit future expenditure plan requests for management reserve funds to 10 percent of the total funds requested for the program, or adequately justify any management reserve requests in excess of 10 percent.		✓	
6. Implement process controls for SEI's Software Acquisition Capability Maturity Model (SA-CMM),[6] and by September 30, 2002, assess and report to Customs' appropriations subcommittees on the CMO's software acquisition process maturity.		✓	
7. Address the risks associated with the accelerated ACE acquisition strategy and report on the strategy going forward and plans for mitigating the risks associated with this strategy.		✓	

[6] Capability Maturity Model[SM] is a service mark of Carnegie Mellon University, and CMM is registered in the U.S. Patent and Trademark Office. The SA-CMM identifies key process areas that are necessary to effectively manage software-intensive system acquisitions. Level 2 is the second level of the SA-CMM's five-level scale; achieving this level means that an organization has the software acquisition rigor and discipline to repeat project successes.

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Results in Brief: Objective 3

Other observation:

ACE cost estimate

The cost estimate in the third expenditure plan is questionable because Customs is still in the process of addressing our open recommendation for having an effective cost estimating program.

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Background

ACE/ITDS Overview

ACE is a Customs Service import processing system that is expected to support fundamental improvements in the service's trade compliance mission area. ACE is to provide, for example,

- more efficient import and export operations,
- increased legitimate cargo flow,
- reduced paper burden,
- more efficient and effective account management, and
- improved data analysis for trade law enforcement and border security.

ITDS is a governmentwide system that is intended to provide a single system interface between the trade community and federal agencies with trade-related missions. ITDS is to

- reduce the data reporting burden placed on the trade community and
- promote more efficient data collection, processing, and dissemination within the federal government.

Background (cont.)

Customs is using a prime contractor, supported by subcontractors, to develop and deploy ACE/ITDS. On April 27, 2001, Customs awarded a 5-year, indefinite-delivery indefinite-quantity contract to International Business Machines (IBM) Global Services. IBM and its subcontractors are collectively called the e-Customs Partnership (eCP).

Customs' current plans call for release of ACE/ITDS capabilities in four increments over 4 years. Each increment contains discrete functionality, building on the functionality from previous increments. The first three increments are further divided into two releases.

The following figure and table illustrate, for each ACE increment and release, (1) the functions, (2) users, and (3) locations by transportation modes.

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Background (cont.)

Allocation of ACE/ITDS Functions across Increments

Functions	ACE increment[7] 1 Release 1	1 Release 2	2	3	4
Enterprise portal and IT infrastructure	Initial	Additional	Additional	Additional	Remaining
Data processing (e.g., reference library and data query capabilities)	Initial	Additional	Additional	Additional	Remaining
Trade agreement (e.g., manage visas, quotas; implement trade agreements)				Initial	Remaining
Integration of ITDS functionality		Initial	Additional	Additional	Remaining
Account management (e.g., create, access accounts)	Initial	Additional	Additional	Remaining	
Account revenue (e.g., generate billing statements, accept payments)		Initial	Additional	Additional	Remaining
Enforcement (e.g., determine violation severity, resolve compliance violations)		Initial	Additional	Remaining	
Selectivity criteria for assessing noncompliance risk, screening incoming transactions			Initial	Additional	Remaining
Cargo release and tracking		Initial	Additional	Additional	Remaining
Ability to process multi-modal goods, full export functions, decommissioning of ACS[8]					All

[7] As of June 2002, only Increment 1 functionality had been allocated to releases. Future release allocation is expected for Increments 2 and 3. *All* means all capabilities within this function are provided in this increment or release; *initial* means a beginning set of capabilities is provided, and the number and type of users may be limited for certain capabilities; *additional* means an increased set of capabilities is provided, and the number and type of users may be expanded for specific capabilities; *remaining* means that the final set of capabilities is provided to intended users.
[8] The Automated Commercial System (ACS) tracks, controls, and processes all goods imported into the United States. ACE is expected to provide all functions currently provided by ACS.

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Background (cont.)

Delivery of ACE/ITDS Incremental Capabilities to Users[9]

ACE/ITDS increment	Customs	Other agencies	Trade/foreign governments
1.1	1500 employees with Web-capable workstations, including 25 national account managers[10]		Initial account management functions to 40 importers and their associated brokers and carriers.
1.2	All primary and secondary inspectors[11] at truck processing locations	Cargo release referral data to Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA)	Expand account management functions to 1100 importers
2.1		Access to transaction data and conveyance, crew, and cargo release data for four federal agencies[12]	Expand account to high-volume, low-risk importers, exporters, and their associated brokers and carriers
2.2		Extend access to additional federal agencies	Extend account functionality to major importers and exporters, and their carriers and brokers
3		Extend access to additional federal agencies	Provide foreign governments access to visa and quota data
4		Extend access to additional federal agencies	Expand foreign governments' access to visa, quota, license, and permit data

[9] As of June 2002, only the number and type of users for Increment 1 had been defined. The specific number and types of users for Increments 2, 3, and 4 are expected to be defined at a future date.
[10] National account managers are 25 Customs employees assigned to work with the largest importers to ensure their compliance with trade laws.
[11] Primary inspectors perform brief inspections of passenger vehicles and, for trucks, examinations of documentation and cargo, driver, and truck. Secondary inspectors perform more detailed inspections as a result of the primary inspection.
[12] Food and Drug Administration (Center for Food Safety and Nutrition), Department of Agriculture (Animal and Plant Health Inspection Service), Immigration and Naturalization Service (crew release data only), and Census Bureau.

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Background (cont.)

Delivery of ACE/ITDS Increments to Locations by Mode

ACE/ITDS increment	Location by mode
1	All truck ports
2	All rail ports All airports All seaports
3	All rail ports All airports All seaports All ports supporting mail entry
4	All truck ports All rail ports All airports All seaports All ports supporting mail entry

Each of Customs' 304 ports process multiple modes of transportation:

- 103 locations process trucks,
- 172 locations process aircraft,
- 33 locations process trains,
- 109 locations process ships, and
- 15 locations process mail.

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Background (cont.)

- **Detailed Description of Increment 1 Release 2**

The $190.2 million requested in the third ACE expenditure plan is for designing, developing, and deploying increment 1 release 2.

Building on increment 1 release 1 (which is to include infrastructure improvements—such as a Web portal[13]—and initial functionality—such as account access), release 2 is to support

- enhanced account management by providing the ability to create, manage, and assess accounts for compliance;
- initial cargo release functions, including the ability to expedite the release of highly compliant importers transporting goods via trucks;
- initial enforcement functions, including the ability to create historical records of interactions between an account and Customs; and
- initial account revenue functions, including the ability to issue periodic billing statements and accept electronic payment.

Release 2 is to be deployed at all truck processing ports, and is to support 1500 Customs personnel, 1100 importers, and FMCSA.

[13] A Web portal is an entry point on the Internet (Web site) that offers such resources and services as search engines and other on-line capabilities.

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Background (cont.)

Summary of Past GAO Reviews on ACE/ITDS Integration

Before 1999, ITDS management responsibility resided in the ITDS Board of Directors. ITDS also had a program office that resided in the Department of the Treasury. At that time, ACE program management responsibility resided in Customs. In February 1999, we reported on overlap, duplication, and inconsistencies between the two systems, and we recommended, among other things, that Customs consider satisfying some ACE requirements through ITDS.[14] Subsequently, Treasury transferred program management responsibility for ITDS to Customs to better integrate the two systems.

In April 2001 we briefed your committees on the results of our second review of the ACE program, noting, among other things, that Customs was investing in an ITDS pilot project separate from the ACE program. We recommended steps to integrate ACE and ITDS management and technology. Subsequently, Customs transferred ITDS program management responsibility to the Customs Modernization Office (CMO) and committed to an integrated approach for managing ACE and ITDS.

[14] U.S. General Accounting Office, *Customs Service Modernization: Serious Management and Technical Weaknesses Must Be Corrected*, GAO/AIMD-99-41 (Washington, D.C.: Feb. 26, 1999).

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Background (cont.)

To this end, in February 2002, Customs expanded eCP's ITDS responsibilities to include

- reviewing existing ITDS assets for use in ACE,
- enhancing the governance structure for the ITDS Board of Directors to increase the effectiveness of interagency cooperation, and
- modifying Customs' enterprise architecture as necessary to ensure that it is consistent with ACE and ITDS architectures.

Overview of ACE/ITDS System and Users

The following figure provides a simplified representation of the functional integration of ACE and ITDS, and the integrated system's relationship with the trade community and federal agencies with trade-related missions.[15]

[15] There are 104 federal agencies that have trade-related missions. The ITDS Board has identified 29 of them as major international trade players.

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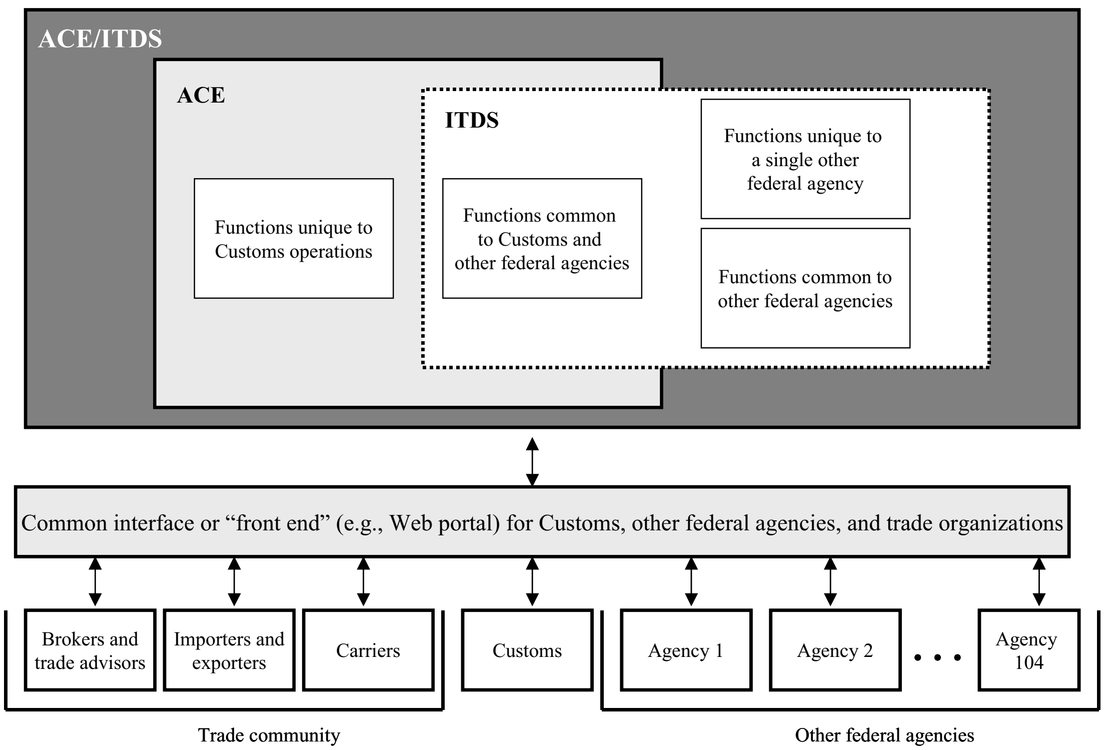
Background (cont.)

Simplified Overview of ACE/ITDS and Users



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Background (cont.)

Chronology of ACE Expenditure Plans and Funding

In March 2001, Congress released to Customs $5 million in funding for the ACE program to sustain Customs modernization office operations.

On March 26, 2001, Customs submitted its first ACE expenditure plan to Congress for $45 million to sustain modernization operations, develop top-level ACE requirements, and provide the infrastructure needed for management of the modernization program.

On February 1, 2002, Customs submitted its second ACE expenditure plan to Congress for $206.9 million to sustain modernization operations; design, develop, and deploy increment 1 release 1; and develop increment 2 requirements.

Congress subsequently approved the use of $188.6 million, bringing total ACE funding to $238.6 million.

On May 24, 2002, Customs submitted its third ACE expenditure plan to Congress, seeking release of $190.2 million from the ACE appropriation to finance the design, development, and implementation of ACE increment 1 release 2.

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Background (cont.)

The following figures illustrate the recent history of ACE appropriations, expenditure plans and funding history, and the funding relationships among ACE expenditure plans and system increments.

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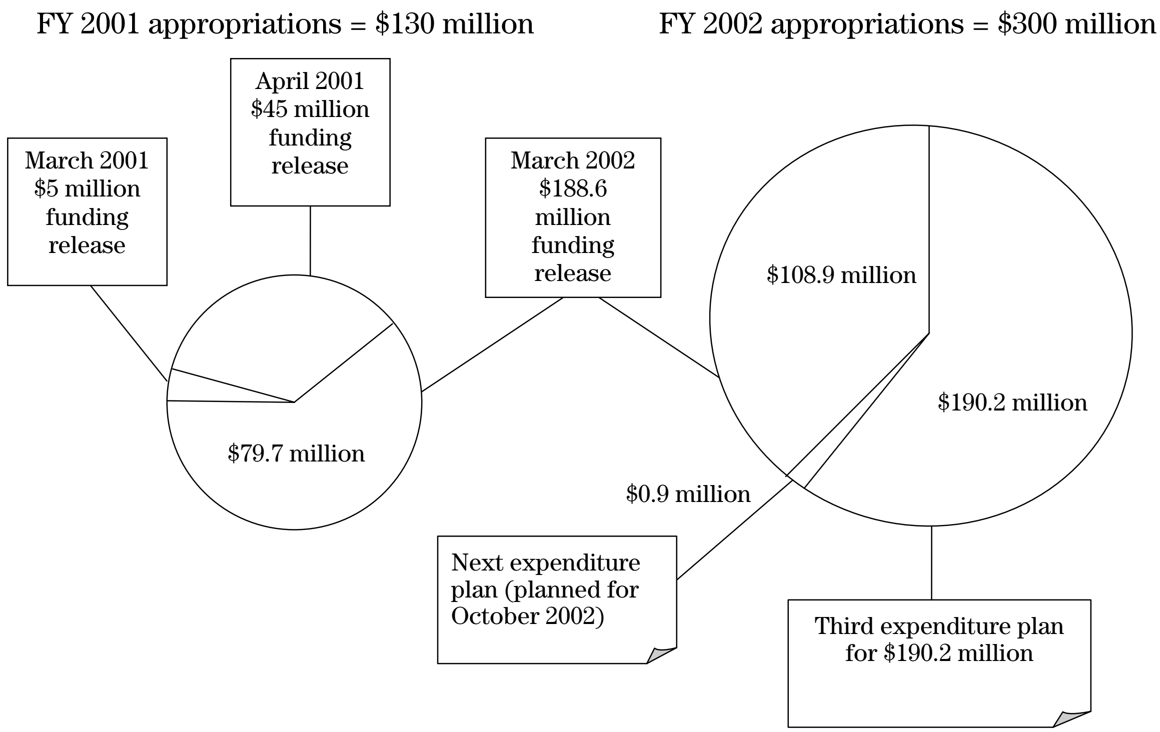
Background (cont.)

ACE funding releases shown by fiscal year appropriations



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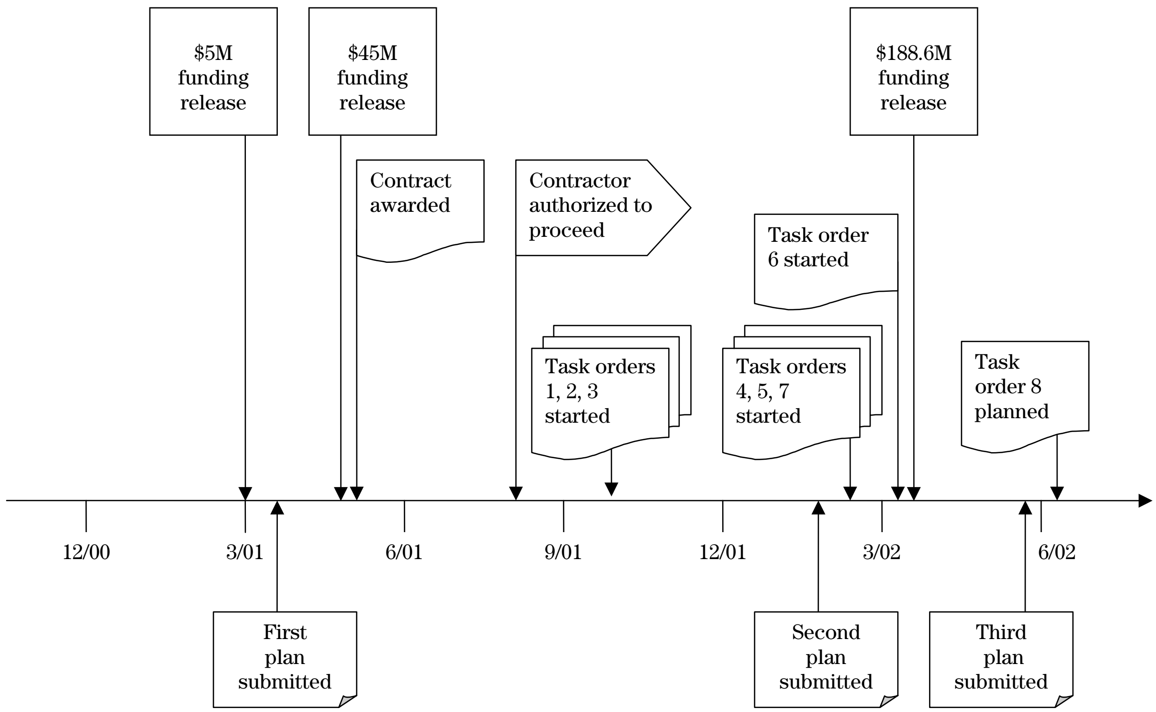
Background (cont.)

Illustrated chronology of ACE expenditure plans and funding



Cumulative funding through second expenditure plan = $238.6 million.

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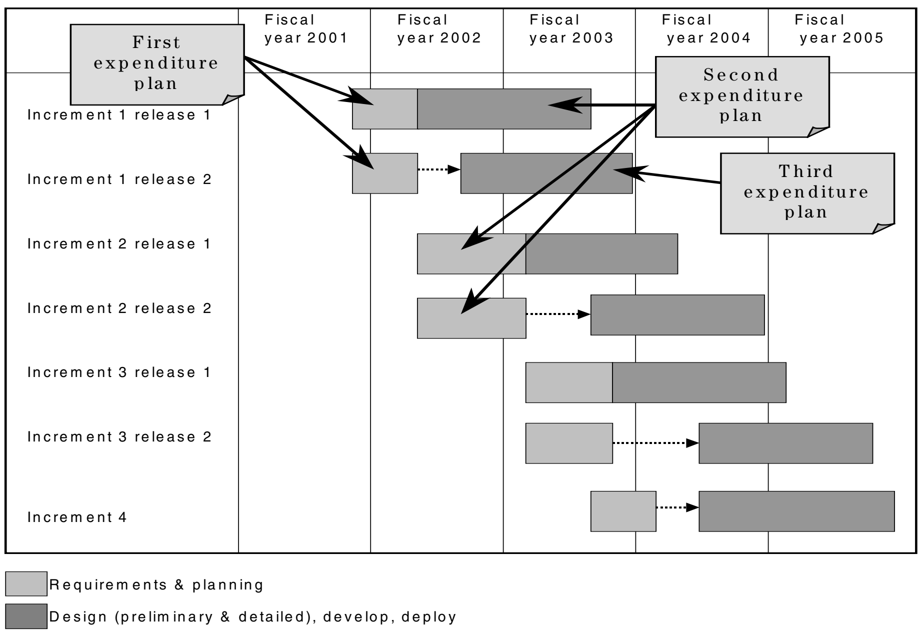
Background (cont.)

Mapping of ACE increments and releases to expenditure plans



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Results: Objective 1

Customs' third expenditure plan satisfies the legislative conditions.

Legislative conditions	Satisfies?	Results of our analysis
1. Plan meets OMB capital planning and investment control review requirements, including OMB Circular A-11, part 3.	✓	The expenditure plan and supporting documentation address OMB capital planning and investment control review requirements, including OMB circular A-11, part 3. For example, the expenditure plan addresses key requirements such as compliance with • federal security and privacy regulations; • Government Paperwork Elimination Act requirements; and • strategic planning requirements that demonstrate how the project will use a performance-based measurement system.
2. Plan complies with Customs' enterprise architecture.	✓	The expenditure plan is for the design, development, and implementation of ACE increment 1 release 2. Customs plans to certify that ACE increment 1 release 2 is compliant with Customs' enterprise architecture before beginning detailed design activities.

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Results: Objective 1 (cont.)

Legislative conditions	Satisfies?	Results of our analysis
3. Plan complies with federal acquisition rules, requirements, guidelines, and systems acquisition management practices.	✓	The expenditure plan provides for satisfying acquisition practices. For example, it includes steps for implementing the SEI SA-CMM key process areas and using Customs' investment management process to ensure that the ACE acquisition will comply with appropriate acquisition practices. If these processes are implemented effectively, Customs' processes should meet federal acquisition rules, requirements, guidelines, and systems acquisition management practices.
4. Plan is reviewed and approved by Customs Investment Review Board, Treasury, and OMB.	✓	The Customs and Treasury Investment Review Boards were consolidated to form the Joint Capital Investment Review Board, which approved the expenditure plan on March 7, 2002. OMB approved the plan on April 30, 2002.
5. Plan is reviewed by GAO.	✓	Customs delivered its expenditure plan to Congress on May 24, 2002. Our review was completed on June 24, 2002.

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Results: Objective 2

Customs' expenditure plan is consistent with our open recommendations.

Open recommendation	Results of our analysis
Justify and make investment decisions incrementally, and for each increment,	Customs has committed to and defined process controls for justifying and making investment decisions incrementally. For ACE increment 1 release 2, Customs
• use disciplined investment processes;	• followed its investment management process, which we determined meets OMB's policy for management of federal information resources;
• prepare realistic and supportable benefit expectations;	• prepared and is in the process of refining benefit expectations for ACE increment 1, which we determined are generally consistent with OMB's policy for cost benefit analyses of federal programs;
• require a favorable return on investment and compliance with Customs architecture before making an investment decision; and	• reported a favorable return on investment and plans to certify its compliance with Customs architecture before beginning detailed design activities; and
• validate actual costs and benefits once an increment is piloted.	• plans to validate actual costs and benefits as determined in post-implementation reviews.

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Results: Objective 2 (cont.)

Open recommendation	Results of our analysis
Before building each ACE release (i.e., beginning detailed design and development), certify to Customs' House and Senate appropriations subcommittees that the enterprise architecture has been sufficiently extended to provide the requisite enterprise design content and has been updated to ensure consistency and integration across business areas.	Before building each ACE increment (i.e., beginning detailed design and development), Customs plans to certify to its House and Senate appropriations subcommittees that the enterprise architecture has been sufficiently extended to provide the requisite enterprise design content and has been updated to ensure consistency and integration across business areas. Customs plans the first certification of its enterprise architecture before building ACE increment 1 release 1.

Open recommendation	Results of our analysis
Develop and implement a rigorous and analytically verifiable cost estimating program that embodies the tenets of effective estimating as defined in SEI's institutional and project-specific estimating models.	By December 2002, Customs plans to develop and implement a cost estimating program that employs the tenets of effective cost estimating as defined in SEI's cost estimating guidelines.

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Results: Objective 2 (cont.)

Open recommendation	Results of our analysis
Immediately develop and implement a CMO human capital management strategy that provides both near-term and long-term solutions to the CMO's human capital capacity limitations, including (1) defining the office's skill and capability needs in terms that will allow Customs to attract qualified individuals and (2) providing sufficient rewards and training, linked to performance, to promote their retention.	Customs plans to develop a human capital management strategy. Thus far, Customs has increased the number of positions in the CMO from 11 to 23 and raised their grade levels to address immediate staffing shortfalls (a draft structure has been defined and is awaiting Commissioner approval). According to Customs officials, the strategy will describe the CMO's skills and capability needs (core competencies) linked to performance and reward programs for each of the 23 positions, and will define training for these positions. Customs plans to complete the initial strategy by September 30, 2002, and revise it periodically.

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Results: Objective 2 (cont.)

Open recommendation	Results of our analysis
Limit future expenditure plan requests for management reserve funds to 10 percent of the total funds requested for the program, or adequately justify any management reserve requests in excess of 10 percent.	Customs' third expenditure plan limits its request for management reserve to 10 percent of the total funds requested. Customs plans to limit future requests for management reserve to 10 percent or provide adequate justification for any management reserve request that exceeds 10 percent.

Open recommendation	Results of our analysis
Develop and implement process controls for the SEI SA-CMM level 2 key process areas and for the level 3 acquisition risk management key process area, and by September 30, 2002, conduct and report to Customs' House and Senate appropriations subcommittees on the results of an internal assessment of the CMO's maturity against the SEI SA-CMM level 2 key process areas and the level 3 acquisition risk management key process area.	Customs plans to have all recommended SEI SA-CMM process controls in place by September 30, 2002. At that time, Customs plans to conduct an internal assessment of the CMO's maturity against SA-CMM level 2 key process areas and the level 3 acquisition risk management key process area and report the results to Customs' House and Senate appropriations subcommittees.

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Results: Objective 2 (cont.)

Open recommendation	Results of our analysis
Address the risks associated with the accelerated ACE acquisition strategy, including	Customs addressed and has committed to continuously addressing the risks associated with the accelerated ACE acquisition strategy. As a first step, Customs has
(1) immediately analyzing the risks associated with the degree of design, development, and testing concurrency across ACE increments that is inherent in Customs' 4-year, schedule-driven acquisition strategy;	(1) analyzed the risks by • quantifying the costs associated with the following risks: - rework as a result of parallel design and development tasks; - slower than predicted adoption of ACE functionality; and - increased cost of additional staff for multiple concurrent tasks; • comparing the cost of the 4- and 5-year schedules; and • identifying qualitative benefits associated with the 4-year schedule (e.g., providing functionality earlier to Customs; providing benefits earlier to the trade community and other federal agencies; and supporting border security activities).

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Results: Objective 2 (cont.)

Open recommendation	Results of our analysis
(2) reconsidering the merits of this accelerated strategy; and	(2) presented the results of the analysis to the Customs' Executive Steering Committee, which showed that while quantifiable return on investment from the accelerated schedule was marginal, the qualitative benefits associated with stronger border security justified pursuing the accelerated schedule; and
(3) within 90 days of the date of this briefing, reporting to Customs' House and Senate appropriations subcommittees on the agency's strategy going forward and its plans for mitigating the inherent risks associated with this strategy.	(3) on May 13, 2002, reported to Customs' House and Senate appropriations subcommittees on the agency's decision to implement the 4-year schedule, but commits to not being schedule driven in acquiring and deploying ACE/ITDS and to making risk-based decisions on how to proceed. Customs supporting documentation, including the ACE Program Plan, identifies associated program risks and proposed mitigation techniques for each of these risks.

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Results: Objective 3

Observation: The cost estimate in the third expenditure plan is questionable because Customs is still in the process of addressing our open recommendation for having an effective cost estimating program.

As we have previously reported, the ability to produce reliable cost estimates for inclusion in ACE expenditure plans is essential. Without such estimates, Customs cannot provide congressional committees with the information needed to exercise important program oversight. Ensuring that cost estimates are reliable requires, at a minimum, that Customs satisfy itself that rigorous, analytically verifiable methods are used to derive the estimates.

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Results: Objective 3 (cont.)

SEI has defined guidance for validating the reliability of an estimate.[16] This guidance identifies seven questions. Each question is associated with elements that, if present, support the credibility of the estimate.

Seven Questions to Ask to Determine Reliability of Project Estimates

1. **Are the objectives of the estimate clear and correct?**
2. **Has the task been appropriately sized?**
3. **Are the estimated cost and schedule consistent with demonstrated accomplishments on other projects?**
4. **Have the factors that affect the estimate been identified and explained?**
5. **Have steps been taken to ensure the integrity of the estimating process?**
6. **Is the organization's historical evidence capable of supporting a reliable estimate?**
7. **Has the situation changed since the estimate was prepared?**

[16] *A Manager's Checklist for Validating Software Cost and Schedule Estimates* (CMU/SEI-95-SR-004).

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Results: Objective 3 (cont.)

As stated earlier, Customs plans to develop a cost estimating program by December 2002. For its third expenditure plan, however, Customs used a cost estimate prepared by its prime contractor. Customs subsequently tasked its support contractor with validating the cost estimate. Using the SEI guidance, the support and prime contractors identified weaknesses and reasons for these weaknesses, shown in the table below.

SEI question	Yes	No	Weakness/reason
1. Are the objectives of the estimate clear and correct?	✓		
2. Has the task been appropriately sized? (e.g., processes for estimating size are documented)		✓	The prime contractor did not completely document its processes for estimating size due to limited time available in the schedule. In addition to this weakness identified by Customs' support contractor, our analysis determined that the individual who estimated size was not certified in function point analysis, the sizing methodology used. Certification in the methodology better ensures an objective, comparative measurement that is consistent and accurate.[17]

[17] The International Function Point Users' Group maintains the Function Point Counting Practices Manual, the recognized industry standard for function point analysis, which is a methodology for software sizing. The group offers professional certification for practitioners of function point analysis as Certified Function Point Specialists.

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Results: Objective 3 (cont.)

SEI question	Yes	No	Weakness/reason
3. Are the estimated cost and schedule consistent with demonstrated accomplishments on other projects?		✓	Estimated cost and schedule consistency with demonstrated accomplishments on other projects was not determined. Although the prime contractor had cost and schedule data for other projects, the contractor decided not to use these data because the projects were not part of Customs' modernization program.
4. Have the factors that affect the estimate been identified and explained? (e.g., a risk analysis has been performed)		✓	The prime contractor did not perform a risk analysis as part of the cost model due to, among other things, limitations in the available schedule; instead the prime contractor used subjectively adjusted data (high labor rate, low COTS[18] utilization rate, and low developer productivity rate) in an attempt to address an undefined level of risk.
5. Have steps been taken to ensure the integrity of the estimating process? (e.g., more than one cost model or estimating approach has		✓	The prime contractor did not use more than one cost model due to limitations in the available schedule.

[18] Commercial, off the shelf (software or hardware).

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Results: Objective 3 (cont.)

SEI question	Yes	No	Weakness/reason
been used)			
6. Is the organization's historical evidence capable of supporting a reliable estimate?		✓	Although the prime contractor had historic evidence for other projects, the contractor decided not to use this evidence because the projects were not part of Customs' modernization program.
7. Has the situation changed since the estimate was prepared?		✓	Yes and the expenditure plan estimate was not changed to reflect the changed situation.

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Results: Objective 3 (cont.)

While the full impact of these weaknesses has not been determined, at least one limitation (inflated labor rate) led to a quantifiable estimate overstatement. Specifically, an $8000 per person month labor rate variance resulted in a funding requirement overestimate of about $36 million for designing, developing, and deploying increment 1 release 2. Because the expenditure plan includes a management reserve of 10 percent of the funding requirement, this means that the management reserve is also overstated by $3.6 million.

According to the eCP Program Executive, the $8000 per person month overstatement is offset by a corresponding understatement in the estimated number of labor hours, which the official attributed to the lack of a complete set of requirements at the time that the plan's estimate was derived.

In contrast, Customs' cost estimate contractor performed an independent estimate of the labor cost for executing the third expenditure plan. The estimate was $77.9 million lower than the labor estimate contained in the expenditure plan. Customs and support contractor officials stated that the independent estimate is not complete and reflects a misunderstanding by the estimator of the scope of work to be performed, and that Customs is currently determining the root cause of the variance.

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Conclusions

Customs' third ACE expenditure plan satisfies the legislative conditions and is consistent with our open recommendations. However, the cost estimate in the plan is questionable.

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Agency Comments

We provided a draft of this briefing and discussed its contents with Customs' Assistant Commissioner for Information and Technology, the Chairman of the ITDS Board of Directors, the eCP Program Executive, and Customs' support contractor officials. The officials agreed with our findings and conclusions that Customs' third ACE expenditure plan satisfies the legislative conditions and is consistent with our open recommendations.

However, Customs and support contractor officials provided comments about our observation on the expenditure plan cost estimate. They agreed that the preferred approach to developing an expenditure plan estimate is conducting a rigorous analysis of technical, schedule, and cost estimate risks and stated that the estimate was not as rigorously developed as future estimates will be. However, they also stated that the expenditure plan estimate remains valid and that our assumption that a $39.6 million savings from use of a lower labor rate is inaccurate. We disagree with this statement because we do not make such an assumption. While we used available data to determine that the prime contractor's estimate is overstated by $39.6 million, we did not determine whether the total estimate is overstated or understated because data were not available to quantify other estimate weaknesses and risk. Thus, we concluded that the estimate is questionable.

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Agency Comments (cont.)

Customs also provided new information. We have incorporated this information in the briefing as appropriate.

Comments from the U.S. Customs Service

U.S. Customs Service

Memorandum

DATE: **July 31, 2002**

MEMORANDUM FOR RANDOLPH C. HITE
U.S. GENERAL ACCOUNTING OFFICE

FROM: Acting Director
Office of Planning

SUBJECT: Draft Audit Report on the United States Customs Service's Third Automated Commercial Environment (ACE) Expenditure Plan

Thank you for providing us with a copy of your draft report entitled "Customs Service Modernization: Third Expenditure Plan Meets Legislative Conditions, but Cost Estimating Improvements Needed" and the opportunity to discuss the issues in this report.

We are pleased that the General Accounting Office (GAO) recognizes the progress we are making to satisfy the recommendations from their previous reviews. We will continue to address all open recommendations aggressively.

GAO gives particular attention to the cost estimation methodology supporting the third expenditure plan, noting that we are still in the process of addressing their prior recommendation on establishing an effective cost estimating program. We continue to pursue efforts to improve our cost estimates supporting expenditure plans. Our fourth expenditure plan will be supported by a detailed internal review of the eCP inputs and independent expenditure plan cost estimates. Each of these efforts will be based on the Systems Engineering Institute's (SEI) guidance for validating the reliability of an estimate. We are confident that these efforts will provide our stakeholders with greater confidence in the cost estimates supporting expenditure plan 4.

Further, Customs is proceeding with acquiring the services of an independent contractor to develop and maintain a Modernization Life Cycle Cost Model which will then support all planning activities. This model will also be based on the SEI estimating guidance.

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If you have any questions regarding these comments, please contact Ms. Michele Donahue at (202) 927-0957.

Christine E. Gaugler

Christine E. Gaugler

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